UNITED STATES AND TRADEMARK OFFICE

Examiner: LO, Suzanne   *Docket No.:* 2859   *Art Unit:* 2128

In re:

    Applicant: WIPPERSTEG, Heinz-Hermann, et al.

    Serial No.:   10/781,092

    Filed: February 17, 2004

APPEAL BRIEF

October 19, 2010

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sirs:

Appellants submit the following for their brief on appeal and respectfully request withdrawal of the outstanding rejections and placement of the application in line for allowance in consideration of same.

I.   <u>REAL PARTY IN INTEREST</u>

The real party in interest in the instant application is the assignee of the application, CLAAS KGaA mbH, Harsewinkel, Germany.

II. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals or interferences with regard to the application.

III. STATUS OF CLAIMS

Claims 2, 5, 6, 8-14 and 18-24 are pending. Claims 1, 3, 4, 7 and 15-17 have been cancelled. Claims 2, 5, 6, 8-14 and 18-24 stand rejected under 35 USC §103(a). Claims 2, 5, 6, 8-14 and 18-24 are appealed.

IV.   STATUS OF AMENDMENTS

A final Office Action was mailed on July 20, 2010, rejecting claims 2, 5, 6, 8-14 and 18-24 under 35 USC §103(a) over US Patent No. 5,712,782 to Weigelt, et al. (Weigelt) in view of US Patent No. 6,553,300 to Ma, et al. (Ma) further in view of US Patent No. 6,192,283 to Holowko (Holowko).

Appellants filed their Notice of Appeal on August 19, 2010.

V.   SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 24 defines a method of optimization of adjustable parameters of at least one machine using a diagnosis data processing system **[41, 49; Figs 2, 3; page 18, lines 13-16]**, comprising the following steps:

defining a plurality of specified situation patterns **[Fig. 4; page 25, line 21-page 26, line 11]** according to data selected from a group consisting of machine-internal data **[43; page 18, line 18-page 19, line 8]**, machine-external data **[44; page 20, line 6- page 21, line 19]**, target data **[47; page 21, lines 1-6]** and combinations thereof **[page 21, lines 10-14]**;

defining a plurality of process algorithms that modify current parameter settings to optimized parameter settings, each of which corresponding to one of the plurality of specific situation patterns **[Fig. 4; page 23, line 19-page 24, line 4]**;

detecting an instant situation pattern according to sampled data selected from the group consisting of machine-internal data, machine-external data, target data and combinations thereof **[Figs. 4, 5; page 28, lines 19-21]**;

selecting a process algorithm from the plurality of stored process algorithms by comparing the detected instant situation pattern to the stored situation patterns to identify both a stored situation pattern most closely corresponding to the instant situation pattern and the process algorithm corresponding thereto **[Figs. 3, 4; page 28, lines 8-11]**; and

executing the identified process algorithm to optimize the machine

adjustable parameters for the detected instant situation pattern **[Fig. 3; page 28,**

lines 12-14].

VI.   GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether independent claim 24, and claims 2, 5, 6, 8-14 and 18-23, which depend from claim 24, are patentable under 35 USC §103(a) over US Patent No. 5,712,782 to Weigelt, et al. (Weigelt) in view of US Patent No. 6,553,300 to Ma, et al. (Ma) further in view of US Patent No. 6,192,283 to Holowko (Holowko).

VII. ARGUMENT

Independent claim 24, and claims 2, 5, 6, 8-14 and 18-24, which depend from claim 24, are patentable under §103(a) over Weigelt in view of Ma further in view of Holowko.

To support the final rejection, the Examiner asserts that Weigelt discloses a method of optimization of adjustable parameters of at least one machine using a diagnosis data processing system [**col. 6, lines 13-24**], comprising:

processing machine-internal data and machine-external data by the data processing system in consideration of the target data [**col. 7, lines 1-39**];

generating further-processible output data [**col. 7, lines 1-39**];

obtaining optimized adjustable parameters [**col. 7, lines 30-34**]; and

using the optimized adjustable parameters for indication to an operator or for adjustment of the at least one machine [**col. 7, lines 34-39**].

The Examiner further asserts that Weigelt fails to disclose:

selecting a process algorithm from the plurality of stored process algorithms by comparing the detected instant situation pattern to the stored situation patterns to identify both a stored situation pattern most closely corresponding to the instant situation pattern and the process algorithm corresponding thereto; and

executing the identified process algorithm to optimize the machine adjustable parameters for the detected instant situation pattern.

The Examiner then asserts that Ma teaches:

defining a plurality of specified situation patterns according to data selected from a group consisting of machine-internal data, machine-external data, target data and combinations thereof **[col. 5, lines 29-58]**;

selecting a situation pattern which comes close or is identical to an instantaneous situation pattern and a process algorithm linked to the situation patter, depending on the at least one part of the machine-internal data, machine-external data with consideration of the target data which defines at least part of an instantaneous situation pattern **[col. 5, lines 29-58; col. 6, lines 1-9]**; and

executing the indentified process algorithm to optimize the machine adjustable parameters for the detected instant situation pattern **[col. 6, lines 6-11]**,

and that it would have been obvious to modify Weigelt's method of

optimization of adjustable parameters in a machine with Ma's selection of

process algorithms in order to eliminate need for constant operator monitoring

and regular adjustment and to reduce operator fatigue **[Ma at col. 2, lines 49-53]**.

The Examiner then further asserts that Weigelt as modified by Ma fails to

disclose:

defining a plurality of specified situation patterns according to data selected from a group consisting of machine-internal data, machine-external data, target data and combinations thereof;

defining a plurality of process algorithms that modify current parameter settings to optimized parameter settings, each of which corresponding to one of the plurality of specific situation patterns;

selecting a process algorithm from the plurality of stored process algorithms by comparing the detected instant situation pattern to the

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stored situation patterns to identify both a stored situation pattern most closely corresponding to the instant situation pattern and the process algorithm corresponding thereto,

that Holowko teaches:

defining a plurality of specified situation patterns according to data selected from a group consisting of machine-internal data, machine-external data, target data and combinations thereof **[col. 11, lines 19-21]**;

defining a plurality of process algorithms that modify current parameter settings to optimized parameter settings, each of which corresponding to one of the plurality of specific situation patterns **[col. 11, lines 25-32]**;

selecting a process algorithm from the plurality of stored process algorithms by comparing the detected instant situation pattern to the stored situation patterns to identify both a stored situation pattern most closely corresponding to the instant situation pattern and the process algorithm corresponding thereto **[col. 11, lines 15-43]**,

and that it would have been obvious to modify Weigelt as first modified by Ma with defined situation patterns and process algorithms of Holowko in order to provide a more simple and efficient method of optimizing parameters **[Holowko at col. 2, lines 48-52]**.

Appellants disagree with both the Examiner's factual representations and reasoning under the law for the following reasons.

Appellants" invention as claimed is a method of optimization of adjustable parameters of at least one machine using a diagnosis data processing system. The optimization is carried out by defining a plurality of specified situation

patterns based on any combination of machine internal data, machine external data and target data, defining a plurality of process algorithms that modify current parameter settings to optimized parameter settings, each corresponding to one of the specific situation patterns.

The method detects an instant situation pattern associated with the machine according to data sampled from any combination of machine internal data, machine external data and target data. The method compares the detected instant situation pattern with the stored situation patterns to identify a stored situation pattern closest to the instant situation pattern and thereby selecting the process algorithm corresponding to same. The selected process algorithm is then executed to optimize the machine adjustable parameters for the detected instant situation pattern.

The method saves time and takes the decision making as to how the machine should be adjusted, in view of machine internal and machine external conditions, out of the hands of an operator.

Weigelt at **col. 7, lines 1-39**, discloses a controlling processor 1 that receives data from a machine (2-7) via telemetry, and processes the transmitted data into a duty plan for the machine. This externally calculated duty plan shows the actual work required of the respective machine, the duty steps and the subsequent application plan. The duty plan is actualized by the data from the machines 2 to 7. The controlling processor 1 stores transmitted data in application devices, which allow an actual position signal for the processing to be performed including associated operating data. This machine external data

comprises application, harvest amount, and other sensor data. The control processor further processes the input data for analysis, calculation, plausibility check, etc.

The plan calculated by the controller 1 is sent to the machine (2-7) via telemetric means. That is, while Weigelt's machines 2-7 may be said to obtain optimized adjustable parameters, they receives respective pans and adjustable parameter settings from the external controller 1, telemetrically, as disclosed at col. 7, lines 34-39.

Ma discloses a control system, i.e., controller 200, for a harvester that includes a supervisory controller, a set of low level controllers and a neuro-fuzzy inference system. The supervisory controller employs human expert knowledge and fuzzy logic to monitor the quality of the harvesting process, such as grain loss, dockage, grain damage, etc., which are machine external parameters.

Based on the measurements of the machine external data, setpoints for all critical functional elements operable in the harvester are determined. The neuro-fuzzy inference system determines machine settings according to the external operating conditions and learns from harvester experience. The parameters of the neuro-fuzzy inference system are stored in on-board memory, which inference system is used for harvester set-up and adjustments.

In more detail, Ma's controller 200 (**Fig. 3**) includes supervisory controller 212, adaptive neurofuzzy inference system 210 and low level controllers 214. The low level controllers are driven according to a set of setpoints. To operate as intended, the supervisory controller 212 (**Fig. 4**) includes a fuzzy controller

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selector 240 to monitor (measure) the quality of machine-exterior data, and based thereon, a set of fuzzy controllers 244 determines adjustments to the setpoints for the low level controllers 214. The fuzzy controllers 214 generate adjustment information and the setpoint calculator 250 determines the setpoints for the low level controllers 214 (**Ma at col. 4, line 63-col. 5, line 9**).

The setpoints are not generated by an algorithm selected based on the algorithm's link to an instant measured situation pattern, as claimed. Instead, Ma's supervisory controller 212 monitors the quality of the harvesting process (grain loss, dockage, grain damage, etc., which are machine external parameters) and based on these machine external parameters, determines the setpoints [**col. 4, line 43-47**]. The measured machine-exterior data is the detected instant situation pattern.

While the Examiner asserts that Ma discloses defining a plurality of specified situation patterns according to data selected from a group consisting of machine-internal data, machine-external data, target data and combinations thereof at **col. 5, lines 29-58** and selecting a situation pattern which comes close or is identical to an instantaneous situation pattern and a process algorithm linked to the situation patter, depending on the at least one part of the machine-internal data, machine-external data with consideration of the target data which defines at least part of an instantaneous situation pattern at **col. 5, lines 29-58** and at **col. 6, lines 1-9**, appellants respectfully disagree.

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Ma at **col. 5, lines 28-39** discloses that the fuzzy logic controller 244 carries out four steps in cooperation with a rule base 260 (**Fig. 5A**) and membership function (**Fig. 5B**).

Ma at **col. 5, lines 40-58** discloses that adaptive neuro fuzzy Inference system 210 (**Fig. 6**) comprises a neuro fuzzy inference system 270, that new machine-exterior data (instant situation pattern) also is sent to the neuro fuzzy inference system 270, which is said to be automatically integrated into the inference system 270.

Ma at **col. 6, lines 1-9** discloses that during operation, if controller 200 determines (by processing the data comprising the detected/measured instant situation pattern) that one or more target ranges are not satisfied (step 316), the controller determines a procedure that a highly experienced operator would follow to adjust the actuators (low level controllers 214). What this means is that the fuzzy logic controllers 244 process the new measured machine-internal data to generate the most appropriate set of set points to drive the low-level controllers 214.

Ma does not disclose defining a plurality of specified situation patterns according to data selected from a group consisting of machine-internal data, machine-external data, target data and combinations, as claimed.

Nor does Ma disclose selecting a situation pattern which comes close or is identical to an instantaneous situation pattern and a process algorithm linked to the situation patter, depending on the at least one part of the machine-internal

data, machine-external data with consideration of the target data which defines at least part of an instantaneous situation pattern.

In Ma's supervisory controller 212, the selector of fuzzy controllers 240 monitors the current machine-exterior data measurements (instant situation pattern) and Ma's fuzzy controllers 244 determine the setpoints. Fuzzy logic controllers map input data to a best solution, i.e., an output. Fuzzy logic controllers do not operate as traditional processors. Fuzzy logic controllers may implement a number of steps, so as such may be said to function as an algorithm, but they are not found to select algorithms, as claimed, in either inference system 210 or supervisory controller 212.

It follows that it would not have been obvious to the skilled artisan to modify Weigelt's method of adjusting (machine) parameters implemented in cooperation with external controller 1, with Ma's "selection of process algorithm method steps" to eliminate a need for constant operator monitoring.

Even assuming, *arguendo*, however, that Ma discloses the step of defining a plurality of process algorithms that modify parameters, which correspond to situation patterns, the step of selecting (based on the claimed step of detecting) one of the process algorithms, etc. and the step of executing, which steps are equivalent to applicants' claimed steps, the skilled artisan still would not have thought to modify Weigelt with these teachings of Ma because Weigelt is not configured to accommodate either Ma's structure or functioning.

To do so would require implementing all of Ma' structure shown in Figs. 3 and 4, and functionality described in detail beginning at **col. 4, line 35** and

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extending through **col. 6, line 12** into Weigelt's external controller 1. This would include separating the supervisory controller 212 and adaptive neuro fuzzy inference system 210 from the low level controllers 214 comprising controller 200, because the low level controllers need to be in the machine itself. That is, while the supervisory controller 212 and adaptive neurofuzzy inference system 210 might be able to be provided in Weigelt's external controller 1, and the low level controllers 214 provided separately therefrom within each of Weigelt's agricultural machines 2-7 (that receive plans calculated by controller 1 telemetrically), making such modifications is not a simple task.

Appellants acknowledge that modifying Weigelt to incorporate the teachings of Ma would not in and of itself prevent a finding of obviousness under the teachings of In re Keller, 208 USPQ 871 (CCPA 1981), but respectfully assert that such proposed modification would render Weigelt unsatisfactory for its intended purpose (see In re Gordon, 221 USPQ 1125 (Fed. Cir. 1984)), and/or at least change Weigelt's respective principles of operation (see In re Ratti, 123 USPQ 349 (CCPA 1959)). Either case compels a legal conclusion that the proposed combination cannot be obvious under the law; MPEP 2143.01.

For that matter, there is no rational underpinning for modifying Weigelt to incorporate the teachings of Ma. Merely asserting that the combination would be beneficial, i.e., relieve the operator of a task of monitoring, appears more a conclusory statement rather than the objective reasoning required by KSR International Co. v. Teleflex Inc, 82 USPQ2d 1385 (2007), the standard for establishing obviousness in combinations.

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Perhaps more importantly, however, and as asserted above, Ma does not defining a plurality of specified situation patterns according to data selected from a group consisting of machine-internal data, machine-external data, target data and combinations, nor selecting a situation pattern which comes close or is identical to an instantaneous situation pattern and a process algorithm linked to the situation patter, depending on the at least one part of the machine-internal data, machine-external data with consideration of the target data which defines at least part of an instantaneous situation pattern.

Hence, modifying Weigelt by the teachings of Ma would not realize the claimed features.

Moreover, while the Examiner asserts that Holowko at **col. 11, lines 19-21** teaches defining a plurality of specified situation patterns, as claimed, at **col. 11, lines 25-32** teaches defines a plurality of process algorithms, as claimed, at **col. 11, lines 15-43** teaches selecting a process algorithm ... by comparing the detected instant situation pattern to the stored situation patterns ... , as claimed, and that and that it would have been obvious to modify Weigelt as first modified by Ma with the defined situation patterns and process algorithms taught by Holowko in order to provide a more simple and efficient method of optimizing parameters **[Holowko at col. 2, lines 48-52]**, appellants again disagree.

Holowko at **col. 11 lines 19-21,** describes comparing a current status S_c of an injection molding machine to a database containing prior machine statuses S_p. Status is not equivalent to defining a plurality of situation patterns, etc., as claimed

Holowko at **col. 11 lines 25-32,** describes adjusting a prior output PO previously attempted when the matched prior status S_c was found based on results R related to prior output PO, which corresponds to matched prior S_p, and saving in a database in a manner relational to three pieces of data, e.g., indexing or physical data arrangement. A prior output PO and results R in any manner known is not equivalent defining a plurality of process algorithms, etc., as claimed.

Holowko at **col. 11 lines 1-14,** describes that, depending on the particular injection molding machine and application, other and/or additional rules may be utilized to determine a current status: S_{c1} or S_{c8} , but for the process for defining Status previously described. There is no description of detecting an instant situation pattern from machine-internal data, machine-external data and combinations thereof, as claimed.

Holowko at **col. 11, lines 33-43,** describes determining results R at a point in time after a prior output PO is attempted, including measurements and comparisons by rules block 100 or error E, but that regardless of the method used, the output O_A is set equal to the prior output attempted PO for the current status and multiplied by an adjustment factor A based upon the results. There is no description of selecting a process algorithm from a plurality of stored process algorithms by comparing, etc., as claimed.

In view of the differences between Holowko's disclosed features and the claimed elements, modifying Weigelt (as proposed to be modified by Ma) by

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incorporating Holowko's features would not realize the invention as set forth in independent claim 24.

But even assuming, *arguendo*, however, that Holowko does disclose the claimed elements (as asserted by the Examiner), modifying Weigelt (as proposed to be modified by the teachings of Ma), as taught by Holowko, would not be a simple matter so would not have been obvious to the skilled artisan.

In more detail, Weigelt operates both hardware and software, including the external controller 1 that communicates to machines 2-7 telemetrically, as described above, which, after modification by the teachings of Ma, would not be able to accommodate the database-centric operation as taught by Holowko without significant further modification. Such further modification by the teachings of Holowko would render Weigelt or Weigelt as proposed to be modified by Ma, unsatisfactory for its intended purpose (see In re Gordon, 221 USPQ 1125 (Fed. Cir. 1984)), or at least change Weigelt's (or Weigelt modified by Ma), respective principles of operation (see In re Ratti, 123 USPQ 349 (CCPA 1959)). Either case compels a legal conclusion that the proposed combinations cannot be obvious under the law; MPEP 2143.01.

For that matter, as in the proposed modification to Weigelt by the teaching of Ma, there is no rational underpinning for modifying Weigelt as proposed to be modified by Ma to incorporate the teachings of Holowko. Merely asserting that the combination would be beneficial, i.e., to provide a more simple and efficient method of optimizing parameters, appears more a conclusory statement rather than the objective reasoning required by KSR.

In view of the foregoing discussion, it is respectfully requested that the Honorable Board of Patent Appeals and Interferences overrule the final rejection of claims 2, 5, 6, 8-14 and 18-24 under §103(a) over Weigelt in view of Ma further in view of Holowko.

Respectfully Submitted,

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VIII. CLAIMS APPENDIX

Copy of Claims Involved in the Appeal:

1. (cancelled)

2. A method as defined in claim 24, further comprising the step of determining the optimization of the adjustable parameters by target data selected from the group consisting of editable target data and storable target data.

3. (cancelled)

4. (cancelled)

5. A method as defined in claim 24, further comprising the steps of editing and storing the machine-internal data, the machine-external data and the output data by the diagnosis data processing system.

6. A method as defined in claim 24, further comprising the step of operating the diagnosis data processing system in a time controlled manner.

7. (cancelled)

8. A method as defined in claim 24, further comprising the step of using a traveling speed, a rotary speed of at least one threshing drum and/or the rotary

speed of a blower of at least one cleaning device as the adjustable parameters to be optimized.

9. A method as defined in claim 24, further comprising the step of using a crop-specific and/or machine-specific parameter as the further parameter; and performing the determination of the further parameter by sensors which are in operative communication with the machine or by inputting.

10. A method as defined in claim 9, further comprising the step of using a parameter selected from the group consisting of a grain loss, a grain throughput, a crop moisture, a crop total throughput and a broken corn portion as the further parameter.

11. A method as defined in claim 9, further comprising the step of using adjustment regions for parameters of working units of the machine as the further parameter.

12. A method as defined in claim 5, further comprising the steps of generating the machine-external data by external systems and using plant-specific data, geographic data, weather data and/or external expert knowledge as the machine external data.

13. A method as defined in claim 12, further comprising the step of using crop and/or data and experience knowledge as the external expert knowledge and as internal expert knowledge.

14. A method as defined in claim 24, further comprising the step of processing a diagnosis selected from the group consisting of process diagnosis, case diagnosis, and model-oriented diagnosis with the chosen process algorithm of the diagnosis data processing system.

15. (cancelled)

16. (cancelled)

17. (cancelled)

18. A method as defined in claim 24, further comprising the step of generating changed process algorithms by the data processing system depending on machine-interior data and machine-exterior data and with consideration of changeable target data.

19. A method as defined in claim 24, further comprising the step of generating changed specific situation patterns by the data processing system in

dependence on machine-interior data and machine-exterior data and with consideration of changeable target data.

20. A method as defined in claim 24, further comprising the step of storing process algorithms, specific situation patterns or both in data sets, wherein the data sets include at least a part of machine-internal data, machine-external data and target data.

21. A method as defined in claim 24, further comprising the step of incorporating in diagnosis data processing system specific situation patterns and associated process algorithms and/or optimized adjustable parameters to be available for further machines.

22. A method as defined in claim 24, wherein the machine is an agricultural harvester; and further comprising the step of defining at least one process algorithm depending on harvesting conditions of the agricultural harvester.

23. A method as defined in claim 24, further comprising the step of adapting the process algorithms by analysis and evaluation.

24. A method of optimization of adjustable parameters of at least one machine using a diagnosis data processing system, comprising the following steps:

defining a plurality of specified situation patterns according to data selected from a group consisting of machine-internal data, machine-external data, target data and combinations thereof;

defining a plurality of process algorithms that modify current parameter settings to optimized parameter settings, each of which corresponding to one of the plurality of specific situation patterns;

detecting an instant situation pattern according to sampled data selected from the group consisting of machine-internal data, machine-external data, target data and combinations thereof;

selecting a process algorithm from the plurality of stored process algorithms by comparing the detected instant situation pattern to the stored situation patterns to identify both a stored situation pattern most closely corresponding to the instant situation pattern and the process algorithm corresponding thereto; and

executing the identified process algorithm to optimize the machine adjustable parameters for the detected instant situation pattern.

IX. EVIDENCE APPENDIX.

None.

X.   RELATED PROCEEDINGS APPENDIX.

None.